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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/809,055	03/16/2001	Ichiro Nomura	35.C15208	4675

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EXAMINER

DONG, DALEI

ART UNIT PAPER NUMBER

2875

DATE MAILED: 06/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/809,055

Applicant(s)

NOMURA ET AL.

Examiner

Dalei Dong

Art Unit

2875

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 19 May 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-46 is/are pending in the application.
- 4a) Of the above claim(s) 31-46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 3/16/2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/809,055.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Specification*

1. The abstract of the disclosure is objected to because the abstract contains the word "comprising" this should be replaced with the word "having". Correction is required.  
See MPEP § 608.01(b).

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,017,259 to Motoi in view of U.S. Patent No. 5,564,958 to Itoh.

Regarding to claims 1-4, 11, 17-18, 21, and 24-30, Motoi discloses in Figure 8, "a vacuum processing apparatus comprising a vacuum chamber that can be used for the above processes. It can also be used as a gauging system for determining the performance of an electron-emitting device of the type under consideration. In FIG. 8, the components of the electron-emitting device that are same as those of the devices in FIGS. 1A and 1B through 6A and 6B are denoted respectively by the same reference symbols. Referring to FIG. 8, the gauging system includes a vacuum chamber 11 and a vacuum pump 12. An electron-emitting device is placed in the vacuum chamber 11. The device comprises a substrate 1 (*electron source substrate*), a pair of device electrodes 2 and 3 (*conductor*), an electroconductive film 4 and an electron-emitting region 5. Otherwise, the gauging system has a power source 13 for applying a device voltage  $V_f$  to the device (*wiring connects the voltage source and the conductor or electrode as shown in the Figure 8*), an ammeter 14 for metering the device current  $I_f$  running through the electroconductive film 4 between the device electrodes 2 and 3, an anode 15 for capturing the emission current  $I_e$  produced by electrons emitted from the electron-emitting region of the device, a high voltage source 16 for applying a voltage to the anode 15 of the gauging system and another ammeter 17 for metering the emission current  $I_e$  produced by electrons emitted from the electron-emitting region 5 of the device. For determining the performance of the electron-emitting device, a voltage between 1 and 10 KV may be applied to the anode, which is spaced apart from the electron-emitting device by distance H which is between 2 mm and 8 mm" (column 16, line 27-54).

Motoi also discloses in Figures 12A and 12B, "a precipitation or printing technique is suitably used for applying a fluorescent material on the glass substrate 33 (*phosphor substrate on which phosphor emitting light by electron-emitting device is arranged*) regardless of black and white or color display. An ordinary metal back 35 is arranged on the inner surface of the fluorescent film 34. The metal back 35 is provided in order to enhance the luminance of the display panel by causing the rays of light emitted from the fluorescent bodies and directed to the inside of the envelope to turn back toward the face plate 36, to use it as an electrode for applying an accelerating voltage to electron beams and to protect the fluorescent bodies against damages that may be caused when negative ions generated inside the envelope collide with them. It is prepared by smoothing the inner surface of the fluorescent film (in an operation normally called "filming") and forming an Al film thereon by vacuum deposition after forming the fluorescent film" (column 20, line 12-27).

So Motoi further yet <sup>discloses</sup> ~~discloses~~ in Figure 13, "the envelope 37 is evacuated by way of the exhaust pipe 52, using an oil free exhaust system 55 typically comprising an ion pump and a sorption pump, while heating the inside to 80 to 250.degree. C. and maintaining the temperature level, until the atmosphere in the inside is reduced to a sufficient degree of vacuum containing organic substances to a very low concentration, when it is hermetically sealed by heating and melting the exhaust pipe. A getter process may be conducted in order to maintain the achieved degree of vacuum in the inside of the envelope 37 after it is sealed. In a getter process (*a gettering process*), a getter arranged at a predetermined position (not shown) in the envelope 37 is heated by means of a

resistance heater or a high frequency heater to form a film by vapor deposition immediately before or after the envelope 38 is sealed (*seal-bonding process*). A getter typically contains Ba as a principal ingredient and can maintain the degree of vacuum established in the envelope 37 by the adsorption effect of the vapor deposition film” (column 21, line 38-55).

However, Motoi does not disclose disposing the electron source substrate and the phosphor substrate within vacuum atmosphere. Itoh teaches in Figure 1, “the display devices 2 each including an envelope (*support the substrates and contains the substrates within the envelope*), as well as a cathode substrate and an anode substrate each received (*process of fixing onto the support*) in the envelope is placed in the chamber 1 and then the evacuation tube of each of the display devices 2 is connected (to each of the heads 3. Then, the valve 9 is rendered open to permit the manifold 5 to communicate with the first dry pump 10, resulting in rough evacuation of the display device being carried out through the manifold 5, valve 4, head 3 and evacuation tube. The rough evacuation causes a pressure in the display device 2 to be reduced to a certain degree, followed by closing of the valve 9 and opening of the gate valve 11. This results in the turbo-molecular pump 13 communicating with the manifold 5, to thereby evacuate an interior of the display device 2 through the manifold 5, valve 4, head 3 and evacuation tube. In this instance, the valve 14 is kept open to back up the second drive pump 15 by means of the turbo-molecular pump 13” (column 4, line 24-40).

Itoh also teaches in Figure 1, “the gate valve 11 is rendered open and simultaneously the heater is operated to increase a temperature in the chamber to a level

of about 350.degree. C. Then, evacuation of display device is continued while keeping the temperature at the level, to thereby form a pressure as low as about  $10^{-7}$  Torr in the display device 2" (column 4, line 41-46).

Itoh further teaches in Figure 1, "rough evacuation of the display device 2 (*exhausting the inside of the container*) is carried out by means of the first dry pump 10 as required and then the gate valve 11 is rendered open to permit the turbo-molecular pump 13 to communicate with the manifold, so that evacuation of the display device 2 to a pressure as low as about  $10^{-5}$  Torr is carried out through the manifold 5, valve 4, head 3 and evacuation tube" (column 4, line 57-63).

Itoh further yet discloses in Figure 1, introduction of the reducing gas (*introducing a gas into the container*) and evacuation of the reducing gas described above are repeated to 10 times or less, for example, 8 times. Then, the display device 2 is subject to evacuation for about 6 hours while keeping an interior of the chamber at about 300.degree. C., resulting in a pressure in the display device 2 being reduced to a level as low as about  $10^{-7}$  Torr, followed by sealing of the evacuation tube or a sealing lid, so that the display device 2 may be kept at a high vacuum" (column 63 to column 5, line 5).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilize the vacuum environment or envelope of Itoh for the electron source substrate and the phosphor substrate of Motoi in order to prevent impurities and moistures enter into the substrates and thus improve the life characteristics of the display device and further increase the luminance of the display device.

Regarding to claim 5 and 6, Motoi in view of Itoh discloses the claimed invention except for vacuum-absorbing and electrically-absorbing the substrate onto the support. It would have been obvious to one having ordinary skill in the art at the time the invention was made to choose different method of connecting the substrate onto the support, in order to satisfies the design requirement and achieve the end result which is connect the substrate onto the support as taught by Motoi in view of Itoh.

Regarding to claims 7-10, Motoi in view of Itoh discloses the claimed invention except for a heat conductor between the substrate and the support member. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilize a heat conductive member between the substrate and the support member in order to efficiently transfer heat from the heater to the substrate; further, Itoh teaches a heater to increase the temperature in the chamber, therefore it is inherent and within the teaching of Itoh to have a heat conductive member to effectively transfer the heat from the support or envelop of Itoh to the substrate.

Regarding to claims 12-16, Motoi in view of Itoh discloses the claimed invention except for the separate chambers and their divider as claimed. Motoi in view of Itoh discloses the claimed invention can be accomplish in one chamber, and therefore it would have been obvious to one having ordinary skill in the art at the time the invention was made to have divide the manufacturing process into separate processing chambers in order to meet the specific design requirements, furthermore, it has been held that

constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179.

Regarding to claims 19-20 and 22-23, Motoi discloses "while an envelope 37 is formed of the face plate 36, the support frame 32 and the rear plate 31 in the above described embodiment, the rear plate 31 may be omitted if the substrate 21 is strong enough by itself because the rear plate 31 is provided mainly for reinforcing the substrate 21. If such is the case, an independent rear plate 31 may not be required and the substrate 21 may be directly bonded to the support frame 32 so that the envelope 37 is constituted of a face plate 36, a support frame 32 and a substrate 21. The overall strength of the envelope 37 against the atmospheric pressure may be increased by arranging a number of support members called spacers (*spacer fixedly disposed preliminary to an inside thereof*) (not shown) between the face plate 36 and the rear plate 31" (column 19, line 48-60).

### ***Conclusion***

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following prior art are cited to further show the state of the art of a method of manufacturing a image displaying apparatus.

U.S. Patent No. 5,622,634 to Noma.

U.S. Patent No. 5,813,893 to Robinson.

U.S. Patent No. 5,846,110 to Kanagu.

U.S. Patent No. 5,938,494 to Betsui.

U.S. Patent No. 6,034,478 to Kawade.

U.S. Patent No. 6,049,167 to Onitsuka.

U.S. Patent No. 6,132,280 to Tanabe.


U.S. Patent No. 6,419,540 to Tanaka.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dalei Dong whose telephone number is (703)308-2870. The examiner can normally be reached on 8 A.M. to 5 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sandra O'Shea can be reached on (703)305-4939. The fax phone numbers for the organization where this application or proceeding is assigned are (703)872-9318 for regular communications and (703)872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

D.D.  
June 5, 2003

  
Sandra O'Shea  
Supervisory Patent Examiner  
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